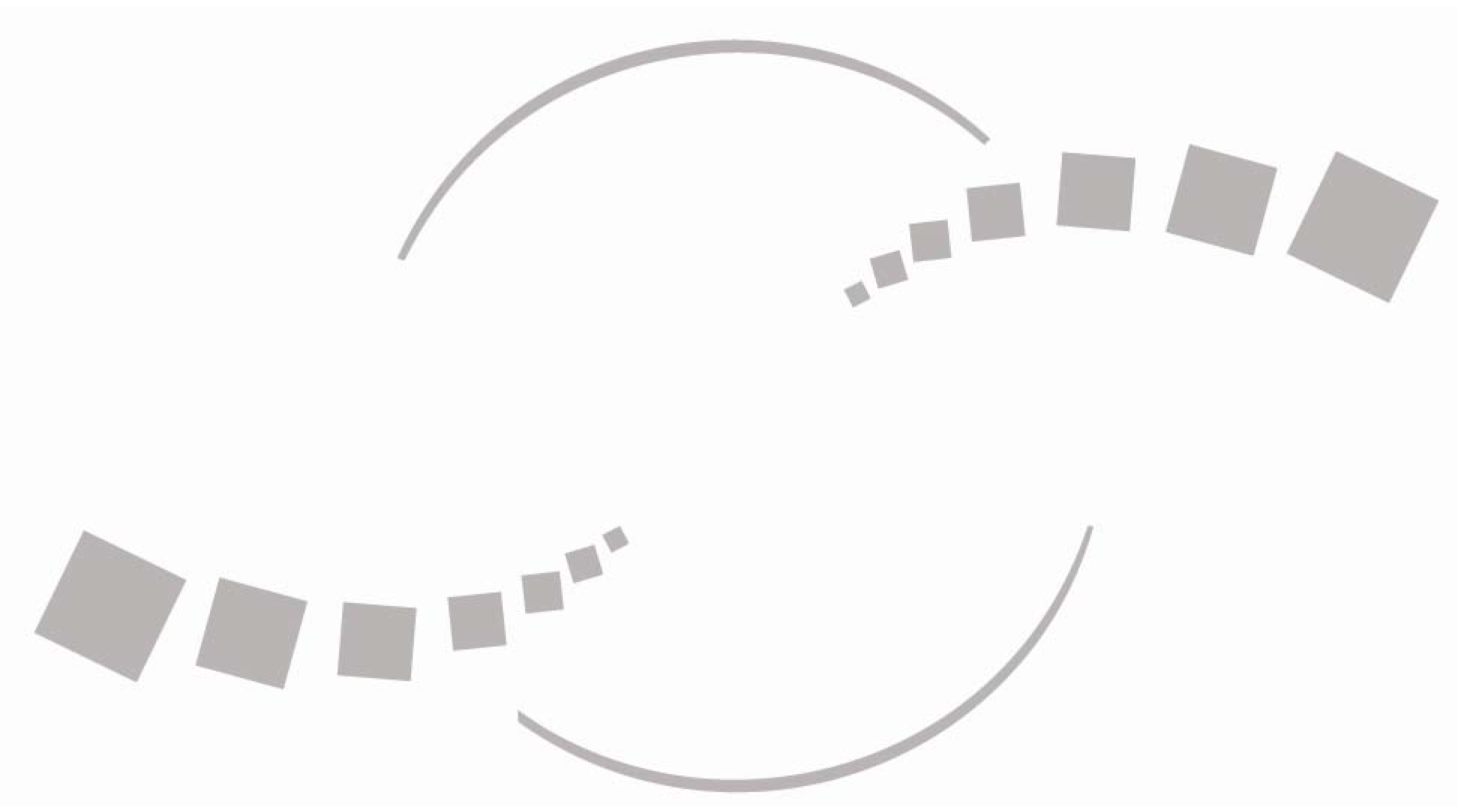
NETSTREAMS®

MUSICA™ MU290

Audio Distribution System

Installation and Operation Guide



Creating the future of home entertainment - today.

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NETSTREAMS®

MUSICA™ MU290 Power Amplifier



This document explains features and configuration
of the *MU290* for *Musica*

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Introduction

The MU290 amplifier offers high performance, high efficiency, low power consumption and extended duty cycles in a very compact half-rack/flat-back package.

The MU290 Power Amplifier is a high quality, class A/B amplifier. This powerful yet compact amplifier utilizes Darlington pairs for linear operation and offers 90 watts per channel or 200 watts bridged into a 4 ohm load. In keeping with *Musica*'s system design of distributed amplification, the MU290 allows you to install the amplifier in the room close to the speakers. This amplifier is designed to be either rack-mounted, flat-back mounted or set on a shelf.

In order to obtain maximum performance from your MU290 Power Amplifier, please take the time to read this brief manual and carefully follow the guidelines for connection and operation.

If after reviewing this manual you should have any questions concerning installing and operating the MU290, please contact technical support at support@netstreams.com.

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Safety

Before using your MU290 External Amplifier, please read this Owner's Manual carefully to ensure optimum trouble-free performance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. CAUTION TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER - SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



- The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
- The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT SAFETY INSTRUCTION-PLEASE READ PRIOR TO PRODUCT INSTALLATION.

1. All of the safety and operating instruction should be read before the amplifier is operated. Retain these instructions for future reference. All instructions should be followed; all warnings on the amplifier and in the operating instructions should be adhered to.

2. This amplifier should not be used near water, for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool, etc.

3. The amplifier should be situated so that its location and position do not interfere with its proper ventilation. For example; the amplifier must not be placed on a rug, bed, sofa, or similar surface which impedes airflow across the chassis. Airflow through the ventilation openings should be unobstructed.

4. Do not place the amplifier near heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.

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Safety (continued)

5. The amplifier should only be connected to 120 VAC, 60 cycle grounded power supply. To avoid defeating the ground polarization of the power plug, do not remove the ground pin on the plug and check the outlet for correct polarization before plugging in the amplifier's power cord.

6. Route power cord and other cables so that they are not likely to be walked on, tripped over, or stressed. Pay particular attention to condition of cords and cables at plugs, and the point where they exit from the amplifier. To prevent risk of fire or injury, damaged cords and cables should be replaced immediately.

7. Clean the amplifier with a damp cloth. Do not use solvents or abrasive cleaners. Never pour any liquid on or in the amplifier.

8. **Damaged amplifiers requiring service.** The amplifier should be serviced by qualified service personnel when:

   the power supply cord or the plug has been damaged.

   objects have fallen or liquid has spilled into the unit.

   the amplifier has been exposed to rain or other moisture.

   the amplifier does not appear to operate normally or exhibits a marked.

   the amplifier has been dropped, or the enclosure damaged.

9. The amplifier should be situated so that its location and position do not interfere with its proper ventilation. For example; the amplifier must not be placed on a rug, bed, sofa, or similar surface which impedes airflow across the chassis. Airflow through the ventilation openings should be unobstructed.

10. The user should not attempt to service the amplifier beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

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Features

This section of the manual provides an overview of the features that make this amplifier unique.

Note: Observe proper polarity in interconnecting all system components.

Caution: Do not connect AC power until all other connections are made.

RJ45 Input/output
The amplifier has been designed for the *NetStreams* product line and has features that allow for a simple installation and the ability to add more products as they become available. The RJ45 connection allows an input from the keypads and an output to another MU290 Power Amplifier or to an Audio Port (EIM). This allows up to six amplifiers to be linked together off of one Keypad for those large area applications. Maximum recommended distance between a Musica keypad and the last product (amplifier or Audio Port) is 75 ft.

Note: The Terminator RJ45 Plug needs to be installed in the Out put connection for the setting in the Keypad to be set.

All RJ45 terminations for the connection between a *Musica* 2.0 keypad and the *MU290* are a straight through terminations; meaning that pin 1 goes to pin1, pin 2 to pin 2.

If a 1.0 *Musica* keypad is used, the chart below describes the termination.

1.0 Keypad	Amplifier
Pin 1	3
2	4
3	5
4	6
5	7
6	8
N/A	1
N/A	2

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Configuration for Stereo Operation

Input Connections
Run a Cat5e cable from the Keypads Audio Port (EIM) output, to the input of the *MU290*.

Output Connections

RJ45 Output
The RJ45 Terminator Plug comes installed in the MU290 but can be removed to add additional MU290's or an Audio Port. If an Audio Port is not used then the RJ45 Terminator plug will need to be installed in the last MU290 of the chain. See figure 1.

Speaker Output
Speaker leads connect via a 4 position Phoenix connector. Be sure to match up the polarity of correctly. (See amp for polarity).

Prepare speaker leads by stripping insulation back 3/16" (6mm). Twist strands together slightly to ensure that there are no stray strands. Connect to terminals that correspond to the channel outputs as follows:



Fig. 1

With a small, flat-blade screwdriver, after inserting the speaker wires into the appropriate hole in the Phoenix connector, tighten the screw until the leads are held securely in place. Inspect for possible shorts or broken wires.

Check the position of the front-panel Bridged/Stereo Mode Selector Switch. The button should be in the "out" position. Be sure the power button is off (out), than plug the line cord into a grounded 120v AC outlet.

The amplifier is now ready for stereo operation.

Configuration for Bridged (Mono) Operation

The MU290 Power Amplifier may also be operated as a powerful single-channel amplifier. This “bridged” mode requires special attention to input and output wiring configurations.

Input Connections
The right and left audio signal will need to be summed together in order to have both channels play out of one speaker. This will need to be done by the installer. Pins 3 and 4 on the RJ45 connection will need to be linked together in order to get a mixed mono signal**.**

Pin Out	Description
1	IR Out +
2	IR Ground
3	Left Input Audio +
4	Right Input Audio +
5	Ground
6	Audio Logic
7	Left Output Audio +
8	Right Output Audio +

Output Connections
Prepare the speaker leads as described on page 3. Insert the stripped leads onto screw terminals 2 and 4 ONLY (Channel 1 Positive (Becomes the Negative) and Channel 2 Positive). Make no connection to terminal 1 and 3. Inspect for possible shorts or broken wires.

Depress the front-panel button marked Bridged/Stereo. Push it in as far as it will go. Be sure the power button is off (out), than plug the line cord into a grounded 120v AC outlet.

The amplifier is now ready for mono operation.

MU290 Input Controls

The input sensitivity of each amplifier channel is adjustable for optimum performance with any line-level source. Adjustment is achieved by means of screwdriver-adjustment rotary controls, recessed behind the front panel. With typical program source levels present, adjust each channel to provide the highest level without distortion. If distortion persists, check the preceding components. The most noticeable distortion usually occurs in early stages of the audio system, such as in the source or its cables. Once you have adjusted the input sensitivity the amplifier will be ready for extended use.

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Configurations

Keypad to MU290

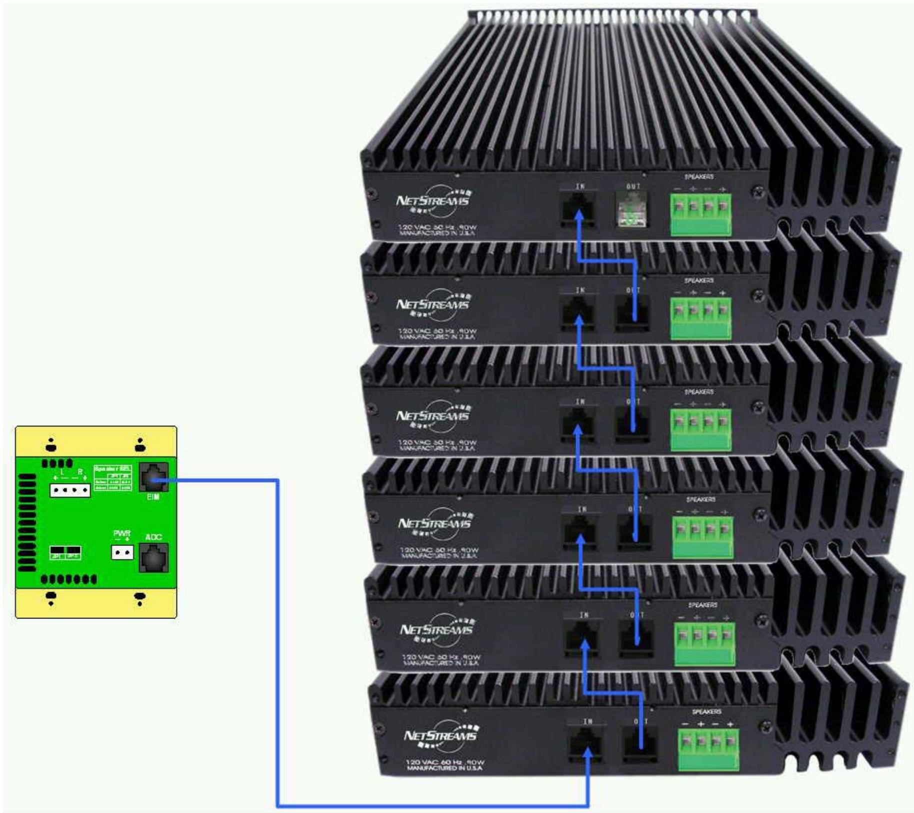


Keypad to MU290 to Audio Port (EIM)



Configurations (continued)

Keypad to first MU290, then serial to (5) more MU290's, then terminator on 6th MU290



Mounting

Your *MU290* amplifier can be easily mounted in one of several ways: 1) on a shelf, 2) mounted to a wall using the brackets included, or 3) mounting in a cabinet using the brackets included. Remember that the MU290 will need to be installed in a well ventilated area.

Special Consideration

- Allow ample ventilation; do not enclose the amplifier so air can not move freely around it, especially above it. If the top of the unit is to be covered, airflow must be provided.
- Avoid operating the amplifier in direct, bright sunlight.
- Avoid contact with moisture. Don't plug into a wet amplifier. If moisture is inside the amplifier, contact *NetStreams* technical support for further instructions.
- Avoid excessive torque on input level controls.
- Avoid very dusty environments. A clean amplifier is a happy amplifier

Trouble Shooting

Problem: *No Input; LED not lit.*
Procedure: IS the amplifier plugged into a live outlet? Is the power switch pushed "IN"? Disconnect the speaker. If the amplifier turns on after a few seconds delay, the problem is in the output connection. Check wiring and speakers for short circuits. If amp will not turn on, return it to your dealer for service.

Problem: *No output on one or both channels; LED lit.*
Procedure: Check level controls, input terminations, bridge switch, source, input cables, speaker connector and wiring.

Specifications

Frequency Response ± 0.5dB	20Hz-20kHz
Bandwidth ± 3dB	5Hz-100kHz
Noise (A weighted, any mode)	98dB below full rated output
THD (8OHm) 20Hz-20 kHz at Rated Output	<0.08%
Input Impedance	20kOHm
Input sensitivity for Rated Output (8OHm)	1v
Maximum Output Power,	20Hz-20 kHz
Stereo	50w x 2 @ 8ohm
	50w x 2 @ 4ohm
Bridged Mono	180w x @8 ohm
Slew Rate (Stereo Mode)	30 v microsecond
Damping Factor	>200/8ohm
Number of Channels	2
Input Connectors	RJ45 (EIA 568a)
Output Connectors	Removable Screw down
Power Requirements (8OHm/Ch)	120v AC 200W
Power Supply Design	High Speed Switching
Dimensions:	*see below*
Height	4.4 cm (1.7 in.)
Width	21.6 cm (8.5 in.)
Depth	25.9 cm (10.2 in.)
Weight	2.5kg. (5.5 lbs.)

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Notes

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For additional information or technical support, please call (512) 977-9393 or email us at support@netstreams.com

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